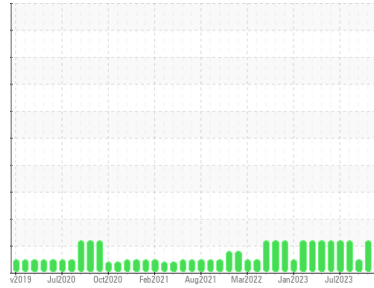




OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



Area
Canton
 Machine Id
[Canton] Oil - Starboard Genset
 Component
Starboard Genset
 Fluid
MARATHON 15W40 (35 GAL)

DIAGNOSIS

- Recommendation**
 Resample at the next service interval to monitor.
- Wear**
 All component wear rates are normal.
- Contamination**
 Fuel content negligible. There is no indication of any contamination in the oil.
- Fluid Condition**
 The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORMATION

| | method | limit/base | current | history1 | history2 |
|---------------|-------------|-------------|--------------------|-------------|-------------|
| Sample Number | Client Info | | WC0805434 | WC0769506 | WC0805401 |
| Sample Date | Client Info | | 27 Feb 2024 | 01 Feb 2024 | 14 Dec 2023 |
| Machine Age | hrs | Client Info | 0 | 17013 | 16491 |
| Oil Age | hrs | Client Info | 0 | 1567 | 0 |
| Oil Changed | Client Info | | N/A | Oil Added | Oil Added |
| Sample Status | | | NORMAL | ABNORMAL | NORMAL |

CONTAMINATION

| | method | limit/base | current | history1 | history2 |
|--------|-----------|------------|------------|----------|----------|
| Glycol | WC Method | | NEG | NEG | NEG |

WEAR METALS

| | method | limit/base | current | history1 | history2 |
|----------|--------|-----------------|----------|----------|----------|
| Iron | ppm | ASTM D5185m >50 | 6 | 12 | 6 |
| Chromium | ppm | ASTM D5185m >4 | 0 | <1 | <1 |
| Nickel | ppm | ASTM D5185m >2 | 0 | 0 | <1 |
| Titanium | ppm | ASTM D5185m | 0 | <1 | 0 |
| Silver | ppm | ASTM D5185m >5 | 0 | 0 | 0 |
| Aluminum | ppm | ASTM D5185m >12 | 1 | 2 | 3 |
| Lead | ppm | ASTM D5185m >17 | 0 | <1 | <1 |
| Copper | ppm | ASTM D5185m >70 | 0 | <1 | <1 |
| Tin | ppm | ASTM D5185m >15 | 0 | 0 | <1 |
| Vanadium | ppm | ASTM D5185m | 0 | 0 | <1 |
| Cadmium | ppm | ASTM D5185m | 0 | 0 | 0 |

ADDITIVES

| | method | limit/base | current | history1 | history2 |
|------------|--------|-------------|-------------|----------|----------|
| Boron | ppm | ASTM D5185m | 149 | 135 | 155 |
| Barium | ppm | ASTM D5185m | 0 | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | 101 | 115 | 111 |
| Manganese | ppm | ASTM D5185m | 0 | <1 | <1 |
| Magnesium | ppm | ASTM D5185m | 710 | 715 | 716 |
| Calcium | ppm | ASTM D5185m | 1388 | 1462 | 1406 |
| Phosphorus | ppm | ASTM D5185m | 676 | 772 | 775 |
| Zinc | ppm | ASTM D5185m | 861 | 918 | 919 |
| Sulfur | ppm | ASTM D5185m | 3285 | 2850 | 2846 |

CONTAMINANTS

| | method | limit/base | current | history1 | history2 |
|-----------|--------|-----------------|------------|----------|----------|
| Silicon | ppm | ASTM D5185m >25 | 5 | 5 | 5 |
| Sodium | ppm | ASTM D5185m | 2 | 8 | 6 |
| Potassium | ppm | ASTM D5185m >20 | 0 | 0 | 2 |
| Fuel | % | ASTM D3524 >4.0 | 1.6 | ▲ 5.0 | 0.4 |
| Water | % | ASTM D6304 >0.1 | NEG | NEG | NEG |

INFRA-RED

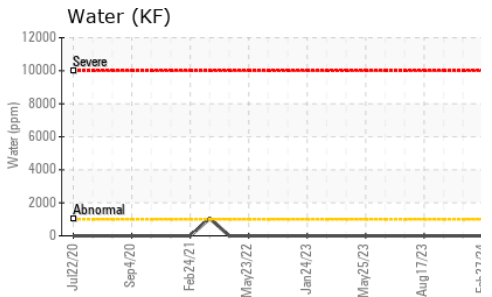
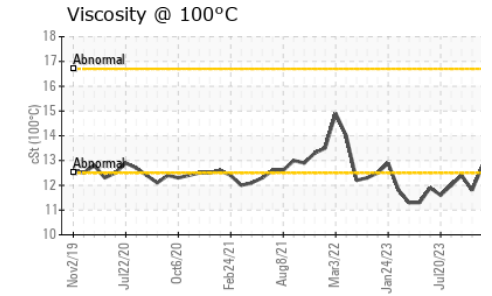
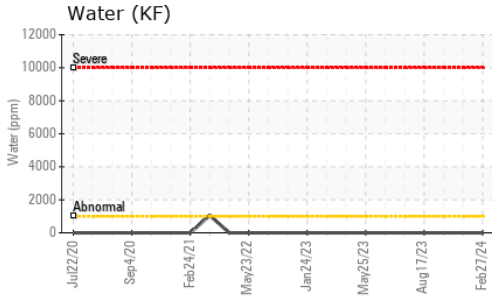
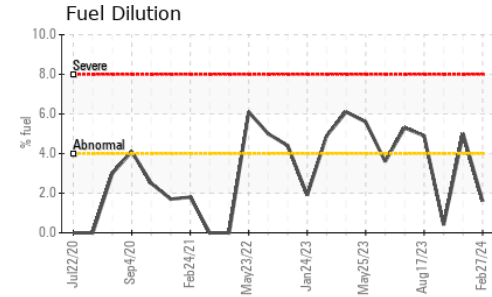
| | method | limit/base | current | history1 | history2 |
|-----------|----------|-----------------|-------------|----------|----------|
| Soot % | % | *ASTM D7844 | 0.1 | 0.2 | 0.1 |
| Nitration | Abs/cm | *ASTM D7624 >20 | 8.7 | 11.5 | 9.6 |
| Sulfation | Abs/.1mm | *ASTM D7415 >30 | 20.0 | 21.1 | 20.6 |

FLUID DEGRADATION

| | method | limit/base | current | history1 | history2 |
|------------------|----------|-----------------|-------------|----------|----------|
| Oxidation | Abs/.1mm | *ASTM D7414 >25 | 17.8 | 21.5 | 18.9 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 9.37 | 8.52 | 9.83 |



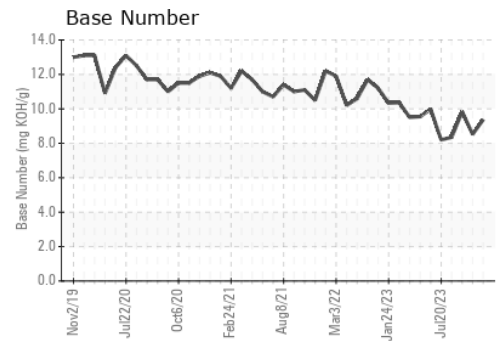
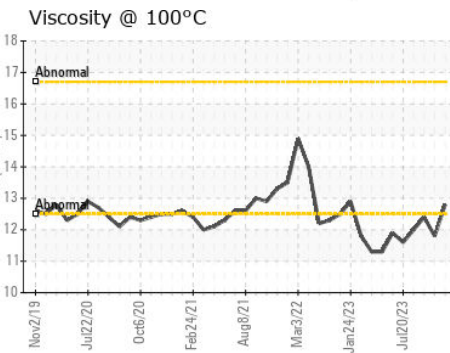
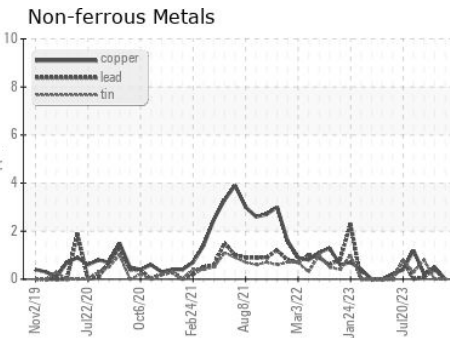
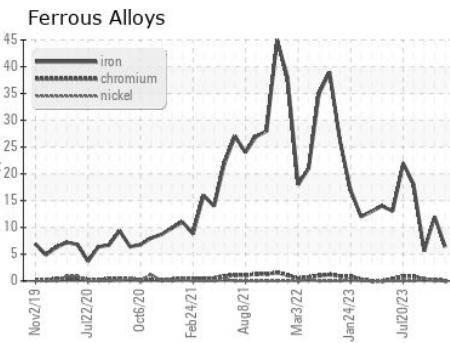
OIL ANALYSIS REPORT



| VISUAL | method | limit/base | current | history1 | history2 |
|------------------|--------|------------|---------|----------|----------|
| White Metal | scalar | *Visual | NONE | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | NONE | NONE |
| Silt | scalar | *Visual | NONE | NONE | NONE |
| Debris | scalar | *Visual | NONE | NONE | NONE |
| Sand/Dirt | scalar | *Visual | NONE | NONE | NONE |
| Appearance | scalar | *Visual | NORML | NORML | NORML |
| Odor | scalar | *Visual | NORML | NORML | NORML |
| Emulsified Water | scalar | *Visual | >0.1 | NEG | NEG |
| Free Water | scalar | *Visual | | NEG | NEG |

| FLUID PROPERTIES | method | limit/base | current | history1 | history2 |
|------------------|--------|------------|---------|----------|----------|
| Visc @ 100°C | cSt | ASTM D445 | 12.8 | ▲ 11.8 | 12.4 |

GRAPHS



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
 Sample No. : WC0805434
 Lab Number : 06122600
 Unique Number : 10936751
 Test Package : IND 2 (Additional Tests: KF, PercentFuel)

Received : 19 Mar 2024
 Tested : 21 Mar 2024
 Diagnosed : 21 Mar 2024 - Jonathan Hester

MARATHON PETROLEUM CO.
 101 12TH ST
 CATLETTSBURG, KY
 US 41169
 Contact: M/V CANTON
 mvcanton@marathonpetroleum.com

To discuss this sample report, contact Customer Service at 1-800-237-1369.

* - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

T:
F: